Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

December 07, 2016

Meagan E. Ormand
Golder Associates Inc.
2108 W. Laburnum Ave.
Suite 200
Richmond, VA 23227

RE: Project: Bremo Weekly Process
Pace Project No.: 92321821

Dear Meagan Ormand:
Enclosed are the analytical results for sample(s) received by the laboratory on December 05, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nicole Gasiorowski
nicole.gasiorowski@pacelabs.com
Project Manager

Enclosures

cc: Ron DiFrancesco, Golder Associates Inc.
Arielle Green, Golder Associates Inc.
Martha Smith, Golder Associates Inc.
Mike Williams, Golder Associates Inc

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: Bremo Weekly Process
Pace Project No.: 92321821

Ormond Beach Certification IDs
8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
Wyoming Certification: FL NELAC Reciprocity
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Asheville Certification IDs
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Eden Certification IDs
205 East Meadow Road Suite A, Eden, NC 27288
North Carolina Drinking Water Certification #: 37738
North Carolina Wastewater Certification #: 633
Virginia/VELAP Certification #: 460025

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Bremo Weekly Process
Pace Project No.: 92321821

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92321821001	**T3-161204-1150-S3**	SM 2540D	KCE	1	PASI-E
		EPA 350.1 1993 Rev 2.0	KCE	1	PASI-E
		SM 4500-Cl-E-2011	KCE	1	PASI-E
		EPA 1664B	JMS	1	PASI-C
		EPA 200.7	RVK	1	PASI-O
		Trivalent Chromium Calculation	HEA	1	PASI-O
		EPA 200.8	DRS	10	PASI-O
		EPA 245.1	SER	1	PASI-A
		EPA 218.7	AEM	1	PASI-O

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Method: **SM 2540D**
Description: 2540D TSS, Low-Level, Eden
Client: Golder_Dominion_Bremo
Date: December 07, 2016

General Information:
1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Method: **EPA 350.1 1993 Rev 2.0**
Description: 350.1 Ammonia
Client: Golder_Dominion_Bremo
Date: December 07, 2016

General Information:
1 sample was analyzed for EPA 350.1 1993 Rev 2.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Method: **SM 4500-Cl-E-2011**
Description: 4500 Chloride
Client: Golder_Dominion_Bremo
Date: December 07, 2016

General Information:
1 sample was analyzed for SM 4500-Cl-E-2011. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Method: **EPA 1664B**
Description: HEM, Oil and Grease
Client: Golder_Dominion_Bremo
Date: December 07, 2016

General Information:
1 sample was analyzed for EPA 1664B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Method: **EPA 200.7**
Description: 200.7 MET ICP
Client: Golder_Dominion_Bremo
Date: December 07, 2016

General Information:
1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: Golder_Dominion_Bremo
Date: December 07, 2016

General Information:
1 sample was analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: Golder_Dominion_Bremo
Date: December 07, 2016

General Information:
1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: Golder_Dominion_Bremo
Date: December 07, 2016

General Information:
1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Method: **EPA 218.7**
Description: Hexavalent Chromium by IC
Client: Golder_Dominion_Bremo
Date: December 07, 2016

General Information:
1 sample was analyzed for EPA 218.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: Bremo Weekly Process
Pace Project No.: 92321821

Sample: T3-161204-1150-S3 **Lab ID: 92321821001** Collected: 12/04/16 11:50 Received: 12/05/16 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2540D TSS, Low-Level, Eden	Analytical Method: SM 2540D							
Total Suspended Solids	**2.2**	mg/L	1.0	1		12/06/16 10:34		
350.1 Ammonia	Analytical Method: EPA 350.1 1993 Rev 2.0							
Nitrogen, Ammonia	ND	mg/L	0.20	1		12/06/16 10:54	7664-41-7	
4500 Chloride	Analytical Method: SM 4500-Cl-E-2011							
Chloride	**75.8**	mg/L	5.0	5		12/06/16 11:29	16887-00-6	
Field Data	Analytical Method:							
Collected By	**L. Hamelman**			1		12/04/16 11:58		
Collected Date	**12/04/16**			1		12/04/16 11:58		
Collected Time	**11:50**			1		12/04/16 11:58		
Field pH	**7.1**	Std. Units	0.10	1		12/04/16 11:58		
HEM, Oil and Grease	Analytical Method: EPA 1664B							
Oil and Grease	ND	mg/L	5.0	1		12/06/16 08:30		
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tot Hardness asCaCO3 (SM 2340B	**209000**	ug/L	3300	1	12/06/16 12:37	12/06/16 16:28		
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	ug/L	5.0	1		12/06/16 18:17	16065-83-1	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	**6.4**	ug/L	5.0	1	12/06/16 12:37	12/06/16 16:32	7440-36-0	
Arsenic	**50.7**	ug/L	5.0	1	12/06/16 12:37	12/06/16 16:32	7440-38-2	
Cadmium	ND	ug/L	1.0	1	12/06/16 12:37	12/06/16 16:32	7440-43-9	
Copper	ND	ug/L	5.0	1	12/06/16 12:37	12/06/16 16:32	7440-50-8	
Lead	ND	ug/L	5.0	1	12/06/16 12:37	12/06/16 16:32	7439-92-1	
Nickel	ND	ug/L	5.0	1	12/06/16 12:37	12/06/16 16:32	7440-02-0	
Selenium	ND	ug/L	5.0	1	12/06/16 12:37	12/06/16 16:32	7782-49-2	
Silver	ND	ug/L	0.40	1	12/06/16 12:37	12/06/16 16:32	7440-22-4	
Thallium	ND	ug/L	1.0	1	12/06/16 12:37	12/06/16 16:32	7440-28-0	
Zinc	ND	ug/L	25.0	1	12/06/16 12:37	12/06/16 16:32	7440-66-6	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.10	1	12/07/16 03:55	12/07/16 06:46	7439-97-6	
Hexavalent Chromium by IC	Analytical Method: EPA 218.7							
Chromium, Hexavalent	ND	ug/L	1.0	1		12/06/16 13:38	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92321821

QC Batch: 339519 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D TSS, Low Level, Eden
Associated Lab Samples: 92321821001

METHOD BLANK: 1882641 Matrix: Water
Associated Lab Samples: 92321821001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	12/06/16 10:31	

LABORATORY CONTROL SAMPLE: 1882642

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	250	244	98	90-110	

SAMPLE DUPLICATE: 1882643

Parameter	Units	92321825001 Result	Dup Result	RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92321821

QC Batch: 339511 Analysis Method: EPA 350.1 1993 Rev 2.0
QC Batch Method: EPA 350.1 1993 Rev 2.0 Analysis Description: 350.1 Ammonia, EDEN
Associated Lab Samples: 92321821001

METHOD BLANK: 1882603 Matrix: Water
Associated Lab Samples: 92321821001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.20	12/06/16 10:49	

LABORATORY CONTROL SAMPLE: 1882604

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1882605 1882606

Parameter	Units	92321825002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	4.9	4.9	98	98	90-110	0	

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92321821

QC Batch: 339528 Analysis Method: SM 4500-Cl-E-2011
QC Batch Method: SM 4500-Cl-E-2011 Analysis Description: 4500 Chloride, EDEN
Associated Lab Samples: 92321821001

METHOD BLANK: 1882682 Matrix: Water
Associated Lab Samples: 92321821001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	12/06/16 11:19	

LABORATORY CONTROL SAMPLE: 1882683

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.9	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1882684 1882685

Parameter	Units	92321825002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Chloride	mg/L	ND	10	10	10.4	10.7	104	106	90-110	2	

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92321821

QC Batch: 339469 Analysis Method: EPA 1664B
QC Batch Method: EPA 1664B Analysis Description: 1664 HEM, Oil and Grease
Associated Lab Samples: 92321821001

METHOD BLANK: 1882460 Matrix: Water
Associated Lab Samples: 92321821001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Oil and Grease	mg/L	ND	5.0	12/06/16 08:27	

LABORATORY CONTROL SAMPLE & LCSD: 1882461 1882462

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Oil and Grease	mg/L	40	36.0	36.3	90	91	78-114	1	30	

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92321821

QC Batch: 339647 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 92321821001

METHOD BLANK: 1883790 Matrix: Water
Associated Lab Samples: 92321821001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.10	12/07/16 06:41	

LABORATORY CONTROL SAMPLE: 1883791

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.3	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1883792 1883793

Parameter	Units	92321821001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.0	2.1	80	82	70-130	2	

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92321821

QC Batch: 336641 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET
Associated Lab Samples: 92321821001

METHOD BLANK: 1802996 Matrix: Water
Associated Lab Samples: 92321821001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	ND	3300	12/06/16 16:00	

LABORATORY CONTROL SAMPLE: 1802997

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	82700	84200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1802998 1802999

Parameter	Units	92321816001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Tot Hardness asCaCO3 (SM 2340B	ug/L	212000	82700	82700	301000	299000	107	105	70-130	1	

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92321821

QC Batch: 336642 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 92321821001

METHOD BLANK: 1803000 Matrix: Water
Associated Lab Samples: 92321821001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	12/06/16 16:25	
Arsenic	ug/L	ND	5.0	12/06/16 16:25	
Cadmium	ug/L	ND	1.0	12/06/16 16:25	
Copper	ug/L	ND	5.0	12/06/16 16:25	
Lead	ug/L	ND	5.0	12/06/16 16:25	
Nickel	ug/L	ND	5.0	12/06/16 16:25	
Selenium	ug/L	ND	5.0	12/06/16 16:25	
Silver	ug/L	ND	0.40	12/06/16 16:25	
Thallium	ug/L	ND	1.0	12/06/16 16:25	
Zinc	ug/L	ND	25.0	12/06/16 16:25	

LABORATORY CONTROL SAMPLE: 1803001

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	49.9	100	85-115	
Arsenic	ug/L	50	50.0	100	85-115	
Cadmium	ug/L	5	5.2	104	85-115	
Copper	ug/L	50	54.2	108	85-115	
Lead	ug/L	50	48.8	98	85-115	
Nickel	ug/L	50	53.2	106	85-115	
Selenium	ug/L	50	53.9	108	85-115	
Silver	ug/L	5	5.4	107	85-115	
Thallium	ug/L	50	49.1	98	85-115	
Zinc	ug/L	250	269	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1803002 1803003

Parameter	Units	92321821001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Antimony	ug/L	6.4	50	50	54.8	56.2	97	100	70-130	2	
Arsenic	ug/L	50.7	50	50	99.2	100	97	100	70-130	1	
Cadmium	ug/L	ND	5	5	5.1	5.1	101	102	70-130	1	
Copper	ug/L	ND	50	50	50.3	51.9	100	103	70-130	3	
Lead	ug/L	ND	50	50	49.5	51.4	99	103	70-130	4	
Nickel	ug/L	ND	50	50	53.0	54.2	99	101	70-130	2	
Selenium	ug/L	ND	50	50	51.5	52.3	102	104	70-130	1	
Silver	ug/L	ND	5	5	5.0	5.2	101	104	70-130	4	
Thallium	ug/L	ND	50	50	50.4	52.7	100	105	70-130	4	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92321821

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1803002			1803003						
Parameter	Units	92321821001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Zinc	ug/L	ND	250	250	256	265	101	104	70-130	3	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92321821

QC Batch: 336585 Analysis Method: EPA 218.7
QC Batch Method: EPA 218.7 Analysis Description: Chromium, Hexavalent IC
Associated Lab Samples: 92321821001

METHOD BLANK: 1802758 Matrix: Water
Associated Lab Samples: 92321821001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	ug/L	ND	1.0	12/06/16 10:59	

LABORATORY CONTROL SAMPLE: 1802759

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	ug/L	.075	.073J	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1802760 1802761

Parameter	Units	92321226001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Chromium, Hexavalent	ug/L	ND	.38	.38	.41J	.43J	108	114	85-115	5	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: Bremo Weekly Process
Pace Project No.: 92321821

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte
PASI-E	Pace Analytical Services - Eden
PASI-O	Pace Analytical Services - Ormond Beach

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Bremo Weekly Process
Pace Project No.: 92321821

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92321821001	**T3-161204-1150-S3**	SM 2540D	339519		
92321821001	**T3-161204-1150-S3**	EPA 350.1 1993 Rev 2.0	339511		
92321821001	**T3-161204-1150-S3**	SM 4500-Cl-E-2011	339528		
92321821001	**T3-161204-1150-S3**				
92321821001	**T3-161204-1150-S3**	EPA 1664B	339469		
92321821001	**T3-161204-1150-S3**	EPA 200.7	336641	EPA 200.7	336709
92321821001	**T3-161204-1150-S3**	Trivalent Chromium Calculation	336746		
92321821001	**T3-161204-1150-S3**	EPA 200.8	336642	EPA 200.8	336712
92321821001	**T3-161204-1150-S3**	EPA 245.1	339647	EPA 245.1	339681
92321821001	**T3-161204-1150-S3**	EPA 218.7	336585		

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: May 24, 2016 Page 1 of 2
	Document No.: F-MEC-CS-009-Rev.03	Issuing Authority: Pace Mechanicsville Quality Office

Sample Condition Upon Receipt

Client Name: Golder/Bruno

Project #

WO#: 92321821

92321821

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:____

Custody Seal Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Date/Initials Person Examining Contents: 12-5-16 KSD

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:____

Thermometer: ☑ RMD001 ☐____ Type of Ice: ☐ Wet ☐ Blue ☐ None

☐ Samples on ice, cooling process has begun

Correction Factor: 0.0°C Cooler Temp Corrected (°C): 2.5

Biological Tissue Frozen? ☐ Yes ☐ No ☐ N/A

Temp should be above freezing to 6°C

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☑ Yes	☐ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WW				
All containers needing acid/base preservation have been checked?	☑ Yes	☐ No	☐ N/A	10. HNO3 pH<2; HCl pH<2; H2SO4 pH<2; NaOH pH>12; NaOH/ZnOAc pH>9
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☑ Yes	☐ No	☐ N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg	☑ Yes	☐ No	☐ N/A	
Samples checked for dechlorination?	☐ Yes	☐ No	☑ N/A	11.
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ N/A	12.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	13.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):____				

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

_____

Project Manager SCURF Review: NMG **Date:** 12/6/16

Project Manager SRF Review: NMG **Date:** 12/6/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)

WO# : 92321821

PM: NMG **Due Date: 12/08/16**
CLIENT: 92_GolderAss

Item#	BP4U-125 mL Plastic Unp	BP3U-250 mL Plastic Unp	BP2U-500 mL Plastic Unp	BP1U-1 liter Plastic Unp	BP3S-250 mL Plastic H2SO4	BP3N-250 mL plastic HNO3	BP3Z-250 mL Plastic ZN Acetate	BP3C-250 mL Plastic NaOH	WGFU-Wide-mouthed Glass jar Unp	AG1U-1 liter Amber Unp	AG1H-1 liter Amber HCl	AG3U-250 mL Amber Unp	AG1S-1 liter Amber H2SO4	AG3S-250 mL Amber H2SO4	AG3A(DG3A)-250 mL Amber NH4Cl	DG9H-40 mL VOA HCl	VG9T-40 mL VOA Na2S2O3	VG9U-40 mL VOA Unp	DG9P-40 mL VOA H3PO4	VOAK (6 vials per kit)-5035 kit	V/GK (3 vials per kit)-VPH/Gas	SP5T-125 mL Sterile Plastic	SP2T-250 mL Sterile Plastic	BP3A-250 mL Plastic (NH2)2SO	Cubitainer	VSGU-20 mL Scintillation vials	GN	
1		1		2	1	3					2													1				
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company	Golder Associates
Address	2108 W Laburnum Ave, Ste 200
	Richmond,VA 23227
Email To	Mormand@golder.com
Phone	804-551-0129 Fax: 804-358-2900
Requested Due Date/TAT:	~~24 HOUR~~ 5-Day

Section B Required Project Information

Report To:	Mormand@golder.com
Copy To	Martha_Smith@golder.com
	Ron_Difrancesco@golder.com
Purchase Order No.:	
Project Name	Bremo Weekly Process
Project Number:	1520-347.220

Section C Invoice Information:

Attention:	Meagan Ormand
Company Name:	Golder Associates
Address:	gaiapdataentry_invoices@golder.com
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER _____

Site Location STATE: VA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	Sample ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: 200.8 - Sb, As, Cd, Cr (III)	200.8 - Pb, Ni, Se, Zn, Cu	200.8 - Ag, Tl	245.1 - Hg	218.6(7) - Cr (VI)	SM4500 - Chloride	1664B - Oil&Grease	350.1 - Ammonia-N	SM2540D - TSS	200.7 - Hardness		Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	TB-16120411SC SS	WW	G	—	—	12/4/16	11 SC		10	X		X	X	X				X	X	X	X	X	X	X	X	X		N	92321821 pH analysis @ 11:58: pH = 7.1
2																														
3																														
4																														
5																														
6																														
7																														
8																														
9																														
10																														
11																														
12																														

001

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
All analyses to be performed under Golder-Pace MSA dated 12/19/2008	Golder	12/5/16	1420		12/5/16	1420	C			
		12-5-16	1720	FedEx Rachel Burrust	12-5-16	1550	2.5	Y	Y	Y

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	L. Hamelman				
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY):	12/04/16		

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.